



## **Installation Manual**

### **TWM Performance Short Shifter**

### **Cobalt SS/SC, SS/TC, HHR SS and Ion Redline**

Please Note: It is preferable to park on a flat surface, as you will have to engage and disengage the hand brake and shift from gears to neutral. If you cannot do so and are obliged to install the short shifter on a slightly inclined surface, place wooden blocks in front and behind the wheels to prevent the car from moving while you're working. Please read this manual completely before beginning to work on your car.

**Estimated Installation Time:** 60-75 minutes

**Tools required:**

- Flat head screw drivers (2 of equal size are recommended)
- Metric socket set with a 13mm socket and a ratchet with an extension
- T-20 and T-25 Torx sockets (or T-20 and T-25 screwdrivers)
- 15mm and 9/16" open ended wrenches
- 5/32 Allen key
- Needle nose pliers
- Wire cutters or sharp scissors
- Flash light or shop light
- Shop towels or rags
- All purpose automotive grease (white Lithium based grease is preferred)
- Telescopic magnet (helpful but not required)





**1.** Remove the rear portion of the center console surrounding the handbrake. Begin by lifting up on the handbrake to engage it. This console piece is held from below with clips at each corner, lift it from the rear until the clips release, then continue by lifting the front portion to release the clips as pictured to the left.

Remove this piece from the car and put in a safe place for re-installation later.



**2.** Remove the cup holder located in front of the shifter by pulling up as pictured. Remove this piece from the car and put in a safe place for re-installation later.





**3.** Unclip the shift boot from the console surrounding the shifter. Pull up on the boot frame from the front first, it is held from below with 2 clips. The rear will come free once the front is unclipped. You can also push up on the front of the plastic boot frame from below by sliding your hand in to the opening created by removing the cup holders and pulling up from above simultaneously. Leave the shift boot in place with the bottom disconnected from the console.



**4.** Begin removal of the front part of the console which surrounds the shifter by lifting the handbrake up. Now lift from the rear as pictured to the left to release the clips securing it from below.

With the rear unclipped, lift on the front portion of the console to release the clips along the edge as pictured. Do not attempt to remove this portion of the console yet as there are connectors to unplug beneath it as described in the following step.





**5.** Unplug the connector beneath the rear passenger side corner of the portion of the console you just unclipped. There is a tab to depress on the clip and then it can be pulled to disconnect it from the console.

Now unplug the connector beneath the front driver's side corner of the portion of the console. There is a tab to depress on the clip and then it can be pulled to disconnect it from the console.



**6.** With both connectors free, the front portion of the console can now be removed from the car. This is simplified with the handbrake pulled all the way up. Slide the shift boot and frame through the hole for the shifter and lift the console up and out of the car. This may be simplified by rotating the console as pictured.

Remove this piece from the car and put in a safe place for re-installation later.





**7.** Slide the head of a flat head screwdriver under the shift pattern piece on top of the shift knob and pry it up and off. In some models this piece is simply glued on, while others have 2 tabs beneath the shift pattern piece. Lift one side gently and work your way around the bottom of the shift pattern to avoid damaging the tabs beneath it.



**8.** Remove the shift pattern piece and determine if your shift knob has a Torx screw holding the shift knob in place. Early models tend not to have a Torx screw as pictured below left, while later models do, as pictured above left. This Torx screw secures the shift knob to the shifter shaft so it must be removed. If your car does not have a Torx screw, skip the next step and proceed to step 10.





9. Use a ratchet and a T-25 Torx bit to unscrew the Torx bolt on top of the shift knob.



**10. USE CAUTION DURING THIS STEP:**

To remove the shift knob, insert 2 equal size flat head screwdrivers between the shift knob and the top of the reverse lock as shown. The shift knob must be pried upward to separate it from the shifter shaft. This step requires some force, and the help of an assistant is beneficial. While one person pries upward on the shift knob, the other can pull upward on the shift knob to separate it from the shaft. The shift knob cannot be twisted as the shaft has splines, however the assistant can pull upward while attempting to turn the shift knob back and forth. If your assistant is pulling up on the shift knob, be careful when it comes free.



11. Remove the shift knob and the reverse lock spring, as well as the foam piece surrounding the spring. These pieces will not be re-installed.



**12.** Pull up on the reverse lock portion of the shifter to slide it off of the shifter shaft with the shift boot attached. Put the reverse lock and shift boot in a safe place for shift boot installation later.



**13.** Put the shifter in 4<sup>th</sup> gear at this point.

Disconnect the shifter cable attached to the bottom of the stock shifter. To do so, use a small flat head screwdriver to pry on the front of the grey cap to pop it open. It will not open all the way, it should just click open slightly relieving tension on the cable allowing it to slide freely on the yellow threaded portion of the cable as pictured to the left.





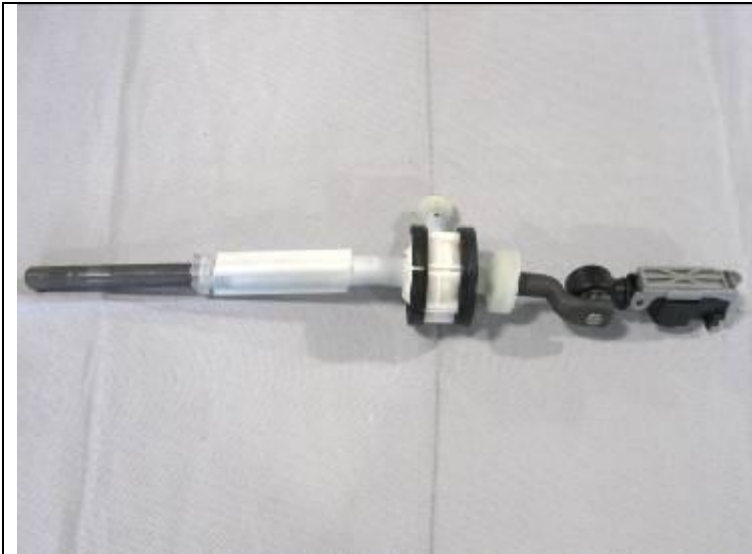
**14.** Use a ratchet with an extension and a T-20 Torx bit to remove the four (4) Torx screws at each corner of the top of the shift assembly. A T-20 Torx screwdriver can also be used as these screws are not very difficult to remove.

With the screws removed lift the black plastic cap off the shift assembly and put in a safe place for re-installation later.



**15.** Lift the stock shifter out of the shift assembly with the pivot cup and black plastic cable housing attached. The shifter may need to be turned slightly for the cable housing attached to the bottom to clear the hole in the shift assembly.

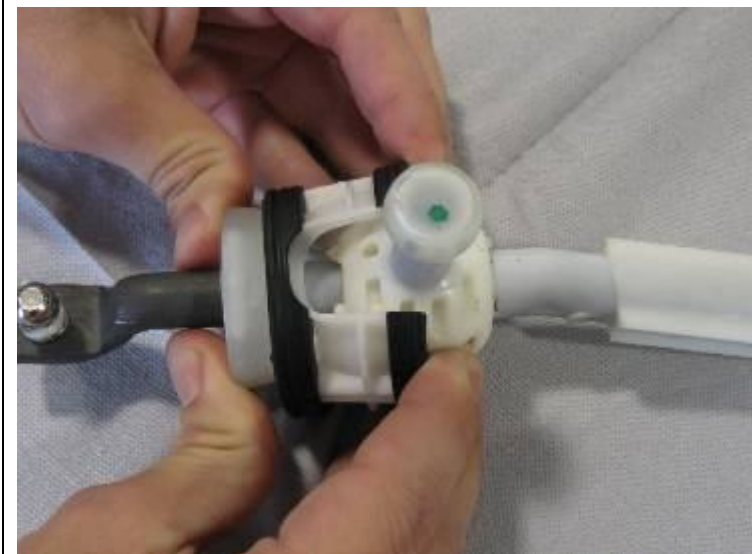




**16.** Pictured to the left is the stock shifter removed from the car, with the pivot cup and cable housing attached at the bottom.



**17.** Remove the shifter cable housing from the bottom of the stock shifter by prying as shown to the left.



**18.** Remove the pivot cup from the stock shifter by pushing it down and off the main pivot ball as pictured to the left.

This step requires some force to get the pivot cup past the plastic bump stop below the pivot ball, however rotating the pivot cup as shown on the next page simplifies removal of the pivot cup.



**18. Continued...**

Pictured to the left is the pivot cup rotated 45 degrees to allow the pivot cup to slide over the plastic bump stop.



**19.** Use white lithium grease to grease the large pivot ball on the TWM short shifter as well as the small bottom pivot ball as shown to the left.





**20.** Install the pivot cup on to the TWM short shifter with the groove on the same side of the ball as the side arm on the shifter.



**21.** Pop the shifter cable housing on to the bottom pivot ball of the TWM short shifter. This is easily performed by placing the cable housing on a firm flat surface and pushing the shifter pivot ball in to it as shown to the left.

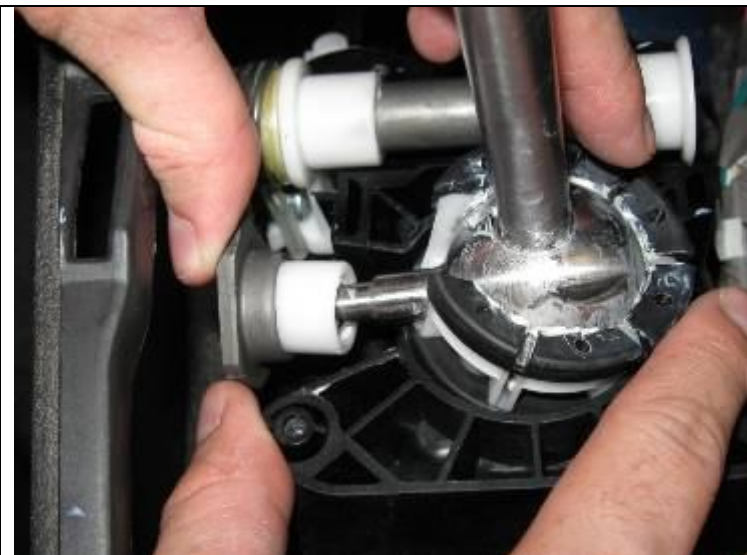


**22.** Install the TWM short shifter with pivot cup and cable housing attached into the shift assembly.

Note: It is important to slide the yellow threaded shifter cable in to the cable housing on the bottom of the short shifter while placing the short shifter in to the shift assembly.

Do not close the grey plastic cap on the cable housing yet, it will need to be adjusted later.





**23.** With the short shifter and pivot cup seated in the shift assembly, slide the white plastic cup on the side arm of the short shifter in to the steel “L” shaped arm on the shift assembly. This cup must be slid in to the steel side arm straight to avoid binding. Place the “L” shaped arm assembly back in to it’s correct location so the 2 white bushings on the cross pin are seated properly in the grooves in the assembly.

Note: It is normal for the 2 white plastic bushings on the cross pin to have slots in them, they are not broken.



Pictured to the left: The short shifter installed with the side pivot cup in the steel side arm, and the steel cross pin with white plastic bushings properly seated in the shift assembly.



**24.** The position of the cable housing is important. Since the transmission is in 4<sup>th</sup> gear, move the short shifter so it is in approximately the 4<sup>th</sup> gear position. The cable housing slides along the yellow threaded cable when you move the shifter, do so until there is approximately 3/8” of an inch of silver shifter cable exposed between the front of the grey plastic cap and the plastic sheath of the shifter cable. The grey cover on the cable housing can now be closed to secure it to the shifter cable. This can be adjusted later by popping the cable housing open again with a small flat head screwdriver if the position is not quite right.





**25.** Re-install the black plastic cap on top of the shift assembly, which you removed in step 14. Use a ratchet with an extension and a T-20 Torx bit to re-install the four (4) Torx screws at each corner of the top of the shift assembly. A T-20 Torx screwdriver can also be used as these screws do not need to be extremely tight. Do not over tighten.



**26.** Apply white lithium based grease to the smooth part of the shifter shaft as shown to the left. Avoid getting grease on the shifter threads at the top of the shaft and in the hole on the side of the shaft, only apply grease to the smooth part of the shifter shaft.



**27.** Install the aluminum reverse lock on to the shifter shaft with the slot facing the passenger side and slide it down the shifter shaft.

**27. Continued...**

Pictured to the left: The aluminum reverse lock installed on the greased shifter shaft.



**28.** Apply grease to the outside surface of the reverse lock bolt with o-rings, do not grease the threads of the bolt.



**29.** Position the reverse lock mechanism to line up the slot with the hole in the shifter shaft. Install the reverse lock bolt and thread it in by hand until it stops.





**30.** Use a 5/32 allen key to tighten the reverse lock bolt.



**31.** Slide the included plastic bushing with the smaller diameter facing down over the threaded part of the shifter shaft. Drop the bushing down into the reverse lock mechanism as far as it will freely slide in.



**32.** Slide the reverse lock spring with the white delrin bushing (included with the short shifter) down in to the reverse lock as shown. The bottom of the spring will contact the bushing you slid in to the reverse lock in the previous step. If you look down in to the reverse lock you should see the bottom bushing installed in the previous step sitting flush at the bottom of the opening in the reverse lock.





**33.** Compress the spring and bushing past the groove in the shifter shaft. Install the included e-clip in to the slot as shown in the image to the left. Be sure the e-clip is properly seated in the groove.

Pictured below left is the short shifter with reverse lock installed and the reverse lock bushings, spring, and clip in place.

Test the short shifter now to ensure that it goes in to every gear, including reverse by lifting up on the reverse lock.

When placed in reverse, the tab on the passenger side of the reverse lock mechanism should hook on to the black plastic tab on the shift assembly keeping the shifter from moving from reverse. This aluminum tab should overlap the black plastic tab by approximately 1/2". If it does not, adjust the shifter cable housing you closed in step 24 as described below.

To adjust the shifter cable, place the shifter in 4th gear. Pop open the grey cap on the cable housing and move the shifter back slightly, and close the cap on the cable housing to secure the cable. Do so until there is sufficient overlap of the reverse lock tab when the shifter is put in reverse. **If you need to adjust the side to side movement, please check Annex 1 at the end of this manual.**



**34. PLEASE NOTE:** The following steps are only required if you have purchased the optional shift assembly bushings with your TWM short shifter. If you do not have the base bushings, proceed to step 41.

Use a flat head screwdriver and needle nose pliers to disconnect the wiring harness on the passenger side of the shift assembly from the shift assembly. Use the flat head screwdriver to pry the clip out a little and create a gap, then use the needle nose pliers to squeeze the tabs on the plastic clip and pull it out to separate the wiring harness from the shift assembly.





**35.** Using a ratchet with an extension and a 13 mm socket, unbolt the four nuts securing the black plastic shift assembly to the floor pan and remove the nuts.

A telescopic magnet or needle nose pliers can be used to remove the nuts as pictured below left as some of them are difficult to access with your hands.



**36.** Lift the shift assembly slightly and use a flat head screwdriver to pry up on the steel sleeves in the rubber bushings. Work your way around the steel sleeves to free them from the rubber bushings. Repeat for all four corners of the shift assembly. These steel sleeves will not be re-used so they can be set aside.



**37.** Remove the rubber bushings from the base of the assembly by pushing them down through the assembly with a flat head screwdriver or with your fingers. It is helpful to pull on the bushings from beneath the assembly with your fingers while pushing them down through the top with your other hand. Repeat for all four corners of the shift assembly. These rubber bushings will not be re-used so they can be set aside.



**38.** Lift the shift assembly slightly and install the aluminum base bushings on to the studs beneath the shift assembly with the smaller diameter step facing up. This step on the bushings fits in to the holes in the plastic assembly to replace the rubber bushings you removed in the previous step.

Install a bushing on each stud beneath each corner of the shift assembly one corner at a time and lower the shift assembly on to them. Ensure that the assembly is seated properly with each smaller diameter step on the base bushing inserted in the holes at each corner of the shift assembly.



**39.** With the shift assembly properly seated on the aluminum bushings, place one of the stainless steel base bushing washers on to each stud protruding through the assembly, on top of the assembly.





**40.** Secure the shift assembly back in place with the stock nuts and a 13mm socket and ratchet. Be sure the step on the bushings at each corner of the assembly are in the holes in the assembly properly before tightening it down.

Re-install the clip that was removed in step 34 to secure the wiring harness back to the shift assembly.



#### **41. Shift Boot Installation :**

Use wire cutters or scissors to cut the zip tie holding the shift boot to the stock reverse lock. Remove the zip tie from the shift boot and slide it off the reverse lock for installation onto the TWM short shifter.



**42.** Turn the shift boot inside out. Feed the supplied zip tie through the top of the shift boot until it comes out the other end as shown. Do not secure the zip tie yet.





**43.** Slide the shift boot on to the TWM short shifter. Line up the top of the boot with the zip tie passing through with the groove on the reverse lock.



**44.** Tighten the zip tie to secure the shift boot to the reverse lock. Snip off the excess zip tie with wire cutters ensuring not to leave any sharp edges.



**45.** Replace the front portion of the console and slide the shift boot up through the cut out for the shifter. Re-connect the plastic connectors beneath this portion of the console and snap it back in to place by reversing steps 1 to 6. Rotate the shift boot to ensure it is facing the right direction and clip it back in place on the console, slide the rear tabs in first then press down on the front to seat it properly.

Re-install the rear portion of the console that was removed in step 1.



**46. Shift Knob Installation and orientation:**

Thread the supplied low profile jam nut all the way down to the bottom of the threads on the shifter shaft. There is no need to tighten it at this point, simply thread it down by hand.

This step is only required if you have an engraved shift knob. If there is no engraving on the shift knob, proceed to next step.



Thread the supplied aluminum insert on to the shifter shaft by hand with the hex end facing up.



Now lightly tighten the aluminum insert on to the shifter shaft. A 15mm wrench can be used to tighten the insert. The insert should only be snug on the shaft, Do Not Over Tighten.





Thread the shift knob on to the insert until you experience resistance at its lowest point. If there is no engraving, completely tighten the shift knob and you are done.

Pictured to the left is the point where the insert encounters the top of the inside of the shift knob and it stops turning. Notice how the engraving on the shift knob is not aligned correctly. Make a note of how much the shift knob needs to be backed off to align the engraving, in this case it needs to be backed off slightly more than 1/4 turn. Please note that it is impossible to thread the insert deeper to align the engraving, the insert **MUST BE BACKED OFF COUNTER CLOCKWISE**.



Unscrew the shift knob leaving the aluminum insert in place on the shaft. This will allow access to adjust the jam nut and insert to set proper engraving alignment.

Use a 15mm wrench on the hex end of the aluminum insert to back the insert off the appropriate amount. In this case we will back the insert off slightly more than 1/4 of a turn.



Pictured to the left is the insert in it's final resting position once it has been backed off counter clockwise to ensure proper engraving alignment. Continue to hold the insert in this position.





While still holding the insert in place, thread the jam nut up the shaft (counter clockwise) until it touches the bottom of the aluminum insert.

Still holding the insert in position with the 15mm wrench, use a 9/16" open ended wrench to tighten the jam nut up against the bottom of the insert. Do not tighten the insert down as this will change the engraving orientation. Simply hold it in position while tightening the jam nut from below. The jam nut is tightened against the insert by rotating counter clockwise.



Re-install the shift knob and tighten down by hand. If the insert was adjusted correctly the engraving will line up properly. If the engraving does not quite line up properly, remove the shift knob and re-adjust the insert and jam nut to line it up. Only minor adjustments should be required at this point.

**PLEASE NOTE:** if you re-adjust the knob, loosen the jam nut **FIRST** by holding the aluminum insert with a 15mm wrench and rotating the jam nut **CLOCKWISE** with the 9/16" wrench. Do not loosen the insert first, simply hold it with the 15mm wrench and loosen the jam nut beneath to maintain approximately the correct orientation of the insert.



**Congratulations, the installation is complete. Enjoy your new Short shifter.**

**Thank you, for choosing**

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## Annex 1: Side to side shifter adjustment

This particular step will need to be performed on some cars once the short shifter is installed. It will mainly need to be done on the 2008-2010 Cobalt SS/TC and on the HHR SS.

Once you are done installing the short shifter, before installing the shift boot and console back in place, test the shifter to check if all gears are properly engaging. If the 5<sup>th</sup> gear and reverse don't seem to be properly aligned, you will need to adjust the shifter cable on the left side of the shifter.

Shifter cable connection:



Please refer to step #13 of the short shifter installation manual to see how to disconnect the left shifter cable, it's done the same way as the bottom shifter cable.

Once the clip is opened, you can adjust the cable forward or backward. By moving the cable, the shifter itself will move to the right or left. In most case, the shifter will need to move slightly to the right. To check if the shifter cable is properly adjusted, make sure that the reverse lockout mechanism, once pulled up, properly clears the plastic tab on the assembly when you engage reverse. Also check for correct 5<sup>th</sup> gear engagement.

Once the cable is properly adjusted, clip the connection back in place and finish the installation by re-installing the shift boot and center console.

Thank you, for choosing 



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This warranty covers the **original purchasing consumer**. This warranty is limited to repair or replacement by TWM Performance of any TWM Performance product that fails because of a defect in materials or workmanship.

Warranty does not cover the following:

- Damage incurred to related vehicle components
- Regular day to day wear on vehicle
- Shipping costs for replacements
- Installation costs and vehicle down time
- Products that have been modified, incorrectly installed or misused.
- Mounting hardware and bearings

